

ABSTRACT

When a SOI substrate is produced in which a silicon layer is epitaxially grown on an insulating underlay such as a single crystal oxide substrate or an oxide layer stacked on a silicon substrate, a first silicon layer epitaxially grown on the insulating underlay is ion implanted to make a deep part of an interface of the silicon layer amorphous, and then annealed to recrystallize. Next, the silicon layer is heat treated to oxidize part of the surface side, and after the silicon oxide is removed by etching, a silicon layer is epitaxially grown on the remaining first silicon layer to form a second silicon layer. Subsequently, the second silicon layer is again ion implanted to make a deep part of an interface amorphous, then annealing is performed to recrystallize. With this method, a SOI substrate, which is very small in crystal defect density of the silicon layer and good in surface flatness, can be produced. Therefore, on the semiconductor substrate according to the present invention, an electronic device or optical device having high device performance and reliability that cannot be obtained with prior art device can be realized.